

Organic Compositions of Geothermal Waters

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We concluded, that the chemical composition of thermal water, organic matter included, reflects processes leading to their development. *First humic acids* enter the precursors of thermal waters during the sediment deposition and their relative concentration (humic acids/DOC) falls with rising aquifer temperature. *Secondly hydrocarbon gases* enter waters, but in two steps: microbially produced gases, on the one hand, are produced by a diverse suite of anaerobic bacteria, and consist almost solely of methane during diagenesis; and thermogenic heavy HC gases (methane-butane), on the other hand, are generally thought to be produced by thermal and catalytic influences on complex organic matter during late diagenesis and catagenesis. *Thirdly aromatic hydrocarbons*, as authors observed the bulk of the hexane extractable DOM of thermal waters consists of aromatic compounds (e.g. toluene, naphthalene, dibenzofuran) and their derivatives. The onset of aromatic HC genesis starts later than that of thermocatalytic gases during early catagenesis. *Fourthly* the appearance of **phenols** and later that of **fatty acids** is also governed by maturation and their entering takes place only at a more advanced stage of catagenesis than that of aromatic hydrocarbons the waters. There was observed a carbon-chain shortening in the compounds of the hexane extractable DOM, i.e. carbon-carbon single bond cleavage in the side chain apparently occurred in the hottest waters comparing them to the less hot ones.

Thermal waters can be divided into maturity groups on the basis of their organic compositions.

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